



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

D

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,753	12/17/2003	Robert Guido Mejia	200310877-1	5677
22879	7590	11/27/2007	EXAMINER	
HEWLETT PACKARD COMPANY			GOMA, TAWFIK A	
P O BOX 272400, 3404 E. HARMONY ROAD			ART UNIT	PAPER NUMBER
INTELLECTUAL PROPERTY ADMINISTRATION			2627	
FORT COLLINS, CO 80527-2400				

  

MAIL DATE	DELIVERY MODE
11/27/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/736,753	MEJIA, ROBERT GUIDO	
	<b>Examiner</b>	<b>Art Unit</b>	
	Tawfik Goma	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### **Status**

- 1) Responsive to communication(s) filed on 12 September 2007.
- 2a) This action is FINAL.                                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### **Disposition of Claims**

- 4) Claim(s) 1-19 is/are pending in the application.
  - 4a) Of the above claim(s) 9 and 19 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-8 and 10-18 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### **Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### **Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### **Attachment(s)**

<ol style="list-style-type: none"> <li>1)<input type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2)<input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3)<input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.</li> </ol>	<ol style="list-style-type: none"> <li>4)<input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.</li> <li>5)<input type="checkbox"/> Notice of Informal Patent Application</li> <li>6)<input type="checkbox"/> Other: _____.</li> </ol>
---	--

## DETAILED ACTION

This action is in response to the amendment filed on 9/12/2007.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, and 5-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Azuma et al (US 6477132).

Regarding claim 1, Azuma discloses a read mechanism used in a contact atomic resolution storage system (fig. 1 and abstract), comprising: a cantilever disposed with a medium which is movable relative to the cantilever (609, fig. 10), the cantilever having a probe which extends from the cantilever and which contacts a surface of the medium (110, fig. 4 and 611, fig. 10); a pod formed on a side of the cantilever facing the medium (106, fig. 4 and 610, 606, fig. 4), the pod extending toward the media (fig. 1 and fig. 3); and a sensor element formed on the pod so as to juxtapose the medium (col. 10 lines 16-28).

Regarding claim 2, Azuma further discloses wherein the pod is formed immediately adjacent the probe (106, fig. 4).

Regarding claim 3, Azuma further discloses wherein the pod at least partially encloses

the probe (106, fig. 4 and 6). The pod encloses the probe on the side of the cantilever arm 109.

Regarding claim 5, Azuma further discloses wherein the sensor element forms part of a device which is responsive to an electric field between the medium and the cantilever (col. 10 lines 16-28).

Regarding claim 6, Azuma further discloses wherein the sensor element forms part of a FET (field effect transistor) (col. 10 lines 16-28).

Regarding claim 7, Azuma further discloses wherein the FET is a depletion mode FET (col. 17 lines 4-8).

Regarding claim 8, Azuma further discloses wherein the FET is an enhancement mode FET (col. 17 lines 4-8).

Claim 17 is rejected under 35 U.S.C. 102 (b) as being anticipated by Binnig et al (US 6249747).

Regarding claim 17 Binnig discloses a method of using a read mechanism for a contact atomic resolution storage system comprising: moving a probe supported on a cantilever relative to a medium which has a data indicative topography that is followed by the probe (fig. 3 and col. 6 lines 7-20); and sensing a change in distance between the cantilever and the medium using a change in current flowing through a sensor element (13, fig. 1, col. 7 lines 24-45) formed in a face of a sensor support extension pod juxtaposed the medium (12, fig. 1).

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Azuma et al (US 6477132) in view of Takimoto et al (US 5610898).

Regarding claim 4, Azuma fails to disclose wherein the pod is essentially annular and surrounds the probe. In the same field of endeavor, Takimoto discloses providing a pod that is essentially annular and surrounds the probe (211, fig. 11). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device disclosed by Azuma by providing an annular pod. The rationale is as follows: One of ordinary skill in the art at the time of the applicant's invention would have been motivated to provide an annular pod in order to support the probe during wear caused by contact with the medium.

Claim 10 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Azuma et al (US 6477132) in view of Binnig et al (US 6249747).

Regarding claim 10, Azuma further discloses wherein one of the probe and the medium is electrically non-conductive (col. 8 lines 26-51), and wherein the medium is supported on a substrate which is electrically conductive (col. 7 lines 41-45), and wherein the substrate is circuited with the FET so that variations in the electrical field which result induce a change in electrical current passing through the FET and produces a read signal (fig. 2a, 2b and col. 6 lines 55-67 through col. 7 1-8). Azuma fails to disclose wherein the variations, which cause a change in electrical current, are a result of a change in the distance between the medium and the cantilever changing. In the same field of endeavor, Binnig discloses detecting a change in the distance between a cantilever and a medium by detecting a current change (col.

7 lines 26-45). It would have been obvious to one of ordinary skill in the art to modify the device disclosed by Azuma in order to detect a change in distance between a cantilever and the medium as taught by Binnig. The rationale is as follows: One of ordinary skill in the art at the time of the applicant's invention would have been motivated to detect a change in the distance in order to use the device with a medium whose data is formed as indentations in the surface of the recording layer.

Claims 11-16 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Azuma et al (US 6477132) in view of Hopson et al (US 6703258).

Regarding claim 11, Azuma discloses a read mechanism used in a contact atomic resolution storage system (fig. 1 and abstract), comprising: a cantilever (109, fig. 4) disposed with an electrically non-conductive medium (col. 8 lines 26-51) which is movable relative to the cantilever (fig. 3 and col. 7 lines 54-60), the cantilever having a probe which follows a topography of the medium (col. 8 lines 3-13); a sensor pod which is formed on the cantilever proximate the probe and which extends toward the medium (106, fig. 4 and fig. 6). Azuma fails to disclose a device formed in the cantilever, which responds to a change in distance between the cantilever and a substrate on which the medium is supported. In the same field of endeavor, Hopson discloses wherein a device is formed in the cantilever that responds to a change in distance between the cantilever and a substrate on which the medium is supported (fig. 3 and col. 2 lines 55-65). It would have been obvious to one of ordinary skill in the art to provide a device as disclosed by Hopson for detecting a change in distance between the cantilever and the medium as taught by Hopson. The rationale is as follows: One of ordinary skill in the art would have been motivated to detect data based on the distance between the cantilever and the medium in order to determine

topographical features of a medium and to detect data that is recorded as surface topographical features in the medium.

Regarding claim 12, Azuma further discloses sensor element formed at a leading end of the pod so as to be oriented toward the medium (106-108, fig. 4).

Regarding claim 13, Hopson further discloses wherein the device is a FET (col. 2 lines 60-65). Azuma further discloses wherein the sensor element forms an operative part of a FET for a read device (col. 10 lines 16-20).

Regarding claim 14, Azuma discloses a method of making a read mechanism for a contact atomic resolution storage system comprising (figs. 7-9): forming a cantilever (109, fig. 4), forming a sensor support extension pod on the cantilever (106, fig. 4), forming a probe on the cantilever so as to have a predetermined spatial relationship with the pod (110, figs. 4 and 6); orienting the pod and the probe towards a medium which is movable relative to the probe (fig. 3 and col. 7 lines 54-60); and forming a sensor element in a portion of the sensor support extension pod juxtaposed the medium (col. 10 lines 16-23). Azuma fails to disclose wherein a data indicative topography is formed on the medium and adapting the probe to follow a data indicative topography of the medium. In the same field of endeavor, Hopson discloses using a sensing element to follow a data indicative topography on the medium (col. 2 lines 55-65). The rationale for combining the teachings follows as in claim 11 above.

Regarding claim 15, Azuma further discloses wherein the step of forming the sensor element comprises forming a FET (Field Effect Transistor) and which further comprises forming the medium on an electrically conductive substrate which is circuited with the FET to produce an electric field (col. 10 lines 16-20 and col. 7 lines 41-45).

Regarding claim 16, Azuma further discloses forming one of the probe and the medium of an electrically non-conductive material (col. 8 lines 26-51).

Claim 18 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Binnig et al (US 6249747) in view of Azuma et al (US 6477132).

Regarding claim 18, Binnig discloses everything as applied to claim 17 above. Binnig fails to disclose using a FET (Field Effect Transistor) as the sensor element formed in the sensor support extension pod; and producing an electric field between a substrate on which the medium is supported and the cantilever. In the same field of endeavor, Azuma discloses using a FET (col. 10 lines 16-20), and producing an electric field between the medium and the cantilever (fig. 3). It would have been obvious to one of ordinary skill in the art to use a FET and produce an electric field as taught by Azuma. The rationale is as follows: One of ordinary skill in the art would have been motivated to use a FET and produce an electric field in order to amplify the current detection of Binnig and to increase the scanning speed of the device (see Azuma col. 5 lines 34-45).

#### *Response to Arguments*

Applicant's arguments filed 9/12/2007 have been fully considered but they are not persuasive.

Regarding applicant's arguments with respect to the Azuma reference, applicant's arguments are not persuasive. First, applicant's argument that the probe does not extend from the cantilever because it extends from the gate electrode is not persuasive because the gate electrode is connected to the cantilever and therefore the cantilever of Azuma has a probe which extends from it. Applicant's argument that the gate electrode (106) is not a pod formed on a side of the

cantilever is not persuasive because the term "pod" is interpreted broadly to mean an element which provides some cover for another element. The gate electrode of Azuma provides a partial cover for the surface 12 formed on the cantilever (fig. 6). Therefore, since the claim does not limit the term pod, the gate electrode of Azuma discloses the "pod" as claimed. Applicant's argument that a sensor element is not formed on the pod is unpersuasive because the gate electrode serves both as the pod in that it covers the element 12 as discussed above, and also as a sensing part for the FET sensor. Applicant's argument that a gate which forms a part of the sensor FET cannot be the sensing element is not persuasive because the gate does perform a sensing function by detecting and passing a current. Furthermore, the sensing element of applicant's disclosure, 120, is similar in that it is a channel which forms a part of an FET sensor 108.

Regarding applicant's arguments with respect to the Binnig reference that there is no teaching of another sensing element other than the sensing tip, this is not persuasive because the contact elements (13) are sensing elements which are formed on the pod 12.

### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tawfik Goma whose telephone number is (571) 272-4206. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tawfik Goma/  
11/23/2007

/William Korzuch/  
SPE, Art Unit 2627